

Production of Antimicrobial Agents against Multidrug-Resistant *Staphylococcus aureus* through the Biocatalysis of Vegetable Oils

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Abstract : Structural modification of natural lipids via chemical reaction or microbial bioconversion can change their properties or even create novel functionalities. Enzymatic oxidation of lipids leading to formation of oxylipin is one of those modifications. Hydroxy fatty acids, one of those oxylipins have gained important attentions because of their structural and functional properties compared with other non-hydroxy fatty acids. Recently 7,10-dihydroxy-8(E)-octadecenoic acid (DOD) was produced with high yield from lipid-containing oleic acid by microbial conversion, and the further study confirmed that DOD contained strong antimicrobial activities against a broad range of microorganisms. In this study, we tried to modify DOD molecules by the enzymatic or physical reaction to create new functionality or to enhance the antimicrobial activity of DOD. After modification of DOD molecules by different ways, we confirmed that the antimicrobial activity of DOD was highly enhanced and presented strong antimicrobial activities against multidrug-resistant *Staphylococcus aureus*, suggesting that DOD and its derivatives can be used as efficient antimicrobial agents for medical and industrial applications.

Keywords : biocatalysis, antimicrobial agent, multidrug-resistant bacteria, vegetable oil

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